



Assessing Non- Native EFL Electrical Engineering Students' Argumentation Performance through Toulmin's Model-based Argumentative Genre Essay

Rumondang Miranda Marsaulina

Software Engineering Program, Faculty of Vocational, Institut Teknologi Del

Abstract

Received: 15 Januari 2024

Revised: 18 Januari 2024

Accepted: 22 Januari 2024

The purpose of this study is to evaluate applied comprehension of fresh year Electrical Engineering students, as non-native EFL adult learners at an IT institute in a remote area using Toulmin's model. The design and procedure of implementing this study with the subject of study encompassing 8 writing teams, sampled out of 16 writing teams formed by 47 Electrical Engineering students, was qualitative approach and summative content analysis. The main finding reveals students have remained to demonstrate less satisfying learning outcome when accomplishing argumentative genre essay task which is providing a compelling argumentation. Factors identified for such low-to-average quality despite rigid Toulmin's model application for argumentation in their essay include the absence of thesis statement equivalent to the claim of an argumentative essay resulting in irrelevant reasons and insufficient evidence far from warranting it to the claim and lack of comprehension to compose a part anticipating critics' rebuts. This study contributes to provide a comprehensive insight into students' performance of developing argumentation through an academic essay after composing Toulmin's model argumentative genre writing, expected to boost further research for teaching and learning methods helping students overcome their obstacles in building compelling arguments.

Keywords: *applied comprehension; compelling; qualitative; Toulmin's argumentative essay model*

(*) Corresponding Author:

How to Cite: Marsaulina, R. (2024). Assessing Non- Native EFL Electrical Engineering Students' Argumentation Performance through Toulmin's Model-based Argumentative Genre Essay. *Jurnal Ilmiah Wahana Pendidikan*, 10(3), 1001-1011. <https://doi.org/10.5281/zenodo.10674700>

INTRODUCTION

Writing an essay as a representation of an academic writing skill is a requirement for all university students. University students regardless their major need to have essay writing skills since essay composition task consisting of paragraphing and demonstrating coherent flow of logical ideas provides necessary implications on rating ESL/EFL writing quality improvement (Li & Huang, 2022). In that regard, Bachelor program students of Electrical Engineering at an IT Institute in a remote area of Indonesia are given academic writing lecture sessions and tasks in two weeks. The students are directed to develop an argumentative essay.

Argumentative essay as one of academic writing genres has been chosen to teach to the students as it generally calls for extensive research of literature or indeed empirical research where students must collect data through interviews, surveys, observations, or experiments, allowing them to comprehend the topic and

to understand different points of view regarding the topic so that they may choose a position and support it with the evidence collected during research. The type of the academic writing compels students to investigate a topic by collecting, generating, and evaluating evidence as well as to establish a position on the topic in a concise manner (Purdue OWL, 2021, par.1). In other words, learning how to compose an argumentative essay will encourage and boost what is mostly expected from learners in Bachelor study program, which is students' reading comprehension and critical thinking skills extensively.

The argumentative text organization selected by the lecturer was based on Toulmin's model. Toulmin's model is a style of argumentation subdividing arguments into 6 parts; 1] claim, an assertion to prove also regarded as the thesis statement ideally in Toulmin's model should be added with nuance and specificity to its assumption helping to counter rebuttals named qualifiers; 2] the claim-to-relevant and effective reasons cohesive to each other, 3] sufficient, credible, and accurate evidence or rationale for each reason, 4] warrant underlying connection between the claim and the evidence or why the evidence supports the claim, 5] anticipated objections consisting of rebuttals/counter arguments to address potential objections to the claim, and 6] backing. This type of essay presents a central claim (or claims, depending on length and purpose) where the evidence and warrant-based arguments must be developed and elaborated to support the claim that also serves as the thesis statement of the essay. This model was taught due to its simplicity to apply (Nesbitt, 2021). Likewise, several academic writing centre websites of world class universities like Duke University, UC Berkeley, University of North Carolina (CSUSM, 2020) claim this model is reliant to guide argumentative text writers.

LITERATURE REVIEW

Several recent findings related to argumentative writing were synthesized to reveal more possibilities for further exploration regarding skills in argumentation text written using English as a foreign language. A study mixing quantitative and qualitative methods describes difficulties faced by sophomores enrolling English major in term of linguistic competence; vocabulary, grammar, coherence and development of an argumentative essay along with average critical thinking (Dang et al., 2020). Despite rigidly applied research design producing reliable and valid results, as many previous scholars already focused, this study still remains a mere comprehensive observation on students' argumentative writing competence. Also, clarification on any specific argumentative text model that students could refer during writing process seems to be missing in paragraphs. Furthermore, a study employing quantitative approach explores struggles of Saudi students in writing argumentative essays (Ozfidan, 2020). He found 187 Saudi students had produced argumentative essays not congruent to their initial hypothesis/claims resulting in missing focus. The lack of this study was he did not complete his finding by specifying an alternative learning design to improve learning process for the next clients. Seemingly interesting to continue to be the focus of a study on EFL students' argumentation skills in written English texts (Suhartoyo et al., 2020) reported subjects of their mixed method study required writing digital tools to cope with grammar challenges, while they were also so stressful to accomplish

introduction and conclusion regarded high demanding. Though some strategies were suggested to help relieve students' psychological barriers when building an argumentative composition, the strategies were described too general, whereas no specific model/method as the basic reference was proposed. The next study was a quantitative-based analysis to students' argumentative text referring to Toulmin's Model presenting details of students' process for developing their argumentation (Jumariati et al., 2021). A lack was identified from verification procedure of the research findings, though. It was inconsistent to their choice of quantitative method. Also, this paper is short of explanation of what ground which provided a basis for their scale scoring ranking students' skills in accomplishing argumentation task aligned to components in Toulmin's model. Prior results simply measuring the extent of non-native English learners' capability in developing an argumentative text using Toulmin's Model has left a loophole regarding the relevance for EFL instructors' training students how to argue using Toulmin's components which can be traced back to students' need for boosting quality of their critical thinking through academic writing task.

Overall, despite possibly similar objectives of this study to those of prior investigations, this research remains potential to contribute to scholarly works on the argumentation skills of non-native English speaking adult learners such as Electrical Engineering students. The relevance of this study is related to verifying findings accomplished by previous scholars or in contrast, invalidating them, as this study was targeted the different population from those of prior studies. For example, the subjects of earlier studies were those possessing sufficient or fairly fluent English background or studying English professionally, while the subject of this study was non-native English speaking university students majoring in non-English, causing varied aspects to have discouraged their argumentation-in English-learning process. This study also has continued to be relevant as it was conducted with an improved methodology, where the method employed was consistent from design stage through verification procedure.

RESEARCH OBJECTIVE

The purpose of this research is to observe the argumentation performance of non-native English speaking students majoring in Electrical Engineering through a 6 paragraph argumentative genre using Toulmin's Model.

SIGNIFICANCE OF RESEARCH

This study contributes to provide a comprehensive insight into students' performance of developing argumentation indicated by their ability to compose a Toulmin's model argumentative genre writing.

METHODOLOGY

The Study Design

The design and implementation of this study was guided by reviewing the research questions as suggested by LeCompte and Schensul (Kawulich, 2015). Selected research design was qualitative, using the case study and summative content analysis approach. Criterion included for studying was students'

accomplishing the argumentative essay writing task or argument's validity indicated by the extent of their essay compelling and effective interpreted from the results of analyzing students' essay parts using components on Toulmin's model as the framework. Named after its creator, British rhetorician Stephen Toulmin, this method was useful for constructing or analyzing a persuasive argument involving breaking an argument into six basic parts, objectively weighing and supporting points both for and against the argument.

The procedure of research started by the preparation for a lecture material on composing argumentative essay using Toulmin's method in PPT slides shared with students a day on the official campus learning management system in advance the regular scheduled Zoom-assisted synchronous class. Students were taught to understand the features of generic argumentative text structure and introduced to a sample of argumentative genre on the scheduled day of week 10. At the end of the 2 hours session, students were given the general theme as their guidance for selecting their own essay topic. For the following one week until the online submission deadline students collaboratively produced their own essay consisting of a complete thesis statement as the claim suggested to appear at the end of Introductory paragraph, at least three reasons and evidence for supporting the claim, and at least one refutation to the thesis statement including selecting appropriate cohesive devices to help show the warrant and keep the paragraphs coherent. Students were tasked to write at least 6 paragraphs, each contained at minimum 5 sentences; one Topic Sentence, 3 Supporting Sentences and one Concluding Sentence. They were told to cite or quote facts and findings by other scholars as the evidence to support the reasons by following APA style in Mendeley tool. They were reminded to cover all citations/quotes in supporting paragraphs constituting their reasons and evidence in section "References".

Units of Analysis and Categorization for Data Coding

The units of analysis in this study were clauses and contexts from students' argumentative essay. Clauses and contexts recorded to interpret the pattern of applied Toulmin's Model argumentative essay features comprehension of Electrical Engineering students as the writers were categorized as the existence and validity of the claim, possible qualifiers and claim exception, relevance and effectiveness of the reasons to the claim, sufficiency, credibility and accuracy of the evidence along with its warranty (stated or implied linkage) to the claim and anticipated objection/ rebuttal. Focuses of analysis encompassed the claim indicated from the thesis statement in introductory paragraph, reasons along with the evidence from Supporting paragraphs, and rebuttal either from the last supporting paragraph or the concluding paragraph. Thurstone scale with only two (2) options, either Yes or No was opted to code the existence or non-availability of claim (thesis statement) in introduction or within the whole essay. The existence of claim was labeled with number "1" whereas the absence of claim was coded with number "0". Likert scale ranging from rate 0-5 was applied for coding the level of claim quality, possible qualifiers, exception statement to the claim, relevance and effectiveness of reasons, evidence and its warranty to the claim, and rebuttal (Vagias, 2006).

Essay producers were 8 teams, each of 3 students. The producers as units of analysis were 24 Electrical Engineering students selected conveniently and non-

probability sampled out of 47 members from class 2021 population. The reason for employing that sampling is that is often used in qualitative research (Luo, 2021). Also, it was selected since this study was not to test a hypothesis about a broad population but to develop an initial understanding of the applied comprehension for written argumentation by a small population of electrical engineering students after having taught the genre in only two hours synchronous meeting.

Data collection

The writing process took one week by a group of 3 students. Analysis on their writing examining the representation of Toulmin's model components in existence and validity took place within 6 weeks. Totally, almost 2 months were dedicated to the data collection and analysis. Content analysis was selected, for this method can be used to quantify the occurrence of certain words, phrases, subjects or concepts in a set of historical or contemporary texts and become a supporting tool for researchers use to make inferences about the producers of the texts they analyze (Luo, 2021). She also stated that researchers like Rabow, Hardie, Fair, & McPhee (2000) reported that content analysis was preferred to analyze manuscript types in a particular journal or specific content in textbooks. Thus, due to its nature for evaluating the quality of document content, content analysis was used in this study.

Data analysis

The type of content analysis used in this study was summative content analysis approach. A study using a summative approach to qualitative content analysis starts with identifying and quantifying certain content in text with the purpose of understanding the contextual use of the words or content. In a summative approach to qualitative content analysis, data analysis begins with searches for occurrences of the identified words by hand or by computer with the text source also is identified. Counting is used to identify patterns in the data and to contextualize the codes (Morgan, 1993). It allows for context interpretation associated with the use of the clause or context. The data analysis started with on hand searches for occurrences of the categories used to evaluate students' applied comprehension for arguing in an academic writing content. Bernard's approach to data analysis by creating a matrix or table of units of analysis by variable was employed in analyzing the data in this study (Kawulich, 2015) The discussion focused on the extent of fresh year Electrical Engineering students applied comprehension for developing English written argumentation and to explore the aspect(s) in the used lesson plan needs improving, like suggesting an alternative to teaching approach to increase the quality of next class' argumentative discourse.

FINDINGS AND DISCUSSIONS

Table 1. Existence of the claim

Group	Existence of the claim
Team 1	Implied claim
Team 2	Implied claim

Team 3	Inappropriate position	
Team 4		No
Team 5		No
Team 6		No
Team 7	Yes	
Team 8		No

Table 1 shows number of teams that have developed the claim, (in Toulmin’s model also serves as the thesis statement), in their argumentative essay. Only team 7 clearly shows their claim as the thesis statement before elaborating the arguments for the claim in their argumentative essay, while teams 1 and 2 imply their claims between paragraph 1 and 2. Team 3 clarifies their claim in concluding paragraph, not precisely corresponding to Toulmin’s model structure.

Table 2. Quality of the claim

Components of claim quality	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8
Qualifiers (1-5)	3	3	4	0	0	0	3	0
Exceptions (1-5)	3	3	4	0	0	0	3	0

Table 2 refers to the abilities of the teams to produce good quality claims according to Toulmin’s model. Based on the model, a good claim should contain qualifiers and exception to reduce possibilities for anticipated object or rebuttals to the claim. The level of quality was rated by Likert’s scale of 1-5 representing these levels: very bad, bad, fair, good, very good. Only team 3 successfully accomplished the good claim, while other four teams displayed claims in average quality making theirs each vulnerable to be anticipated by critics. Meanwhile, all teams without thesis statement or claim in any paragraph of their argumentative essay were given “0” points or considered failure.

Table 3. Identification of Reasons

Identification of Reasons	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8
Reason 1 (1-5)								

Relevance	3	1	3	1	1	1	4	3
Effectiveness	3	1	3	1	1	1	4	3
<hr/>								
Reason II (1-5)								
Relevance	3	1	3	1	1	1	4	3
Effectiveness	3	1	3	1	1	1	4	3
<hr/>								
Reason III (1-5)								3
Relevance	3	1	3	1	1	1	4	
Effectiveness	3	1	3	1	1	1	4	3

As shown from Table 4, only team 7 provide three reasons relevant and effective to back up the claim. Of all teams, 37.5% propose reasons at fair level of quality in terms of relevance and effectiveness, while 50% indicate very poor reasons. Such very bad rating because the teams comprising 37.5% students were considered to present invalid reasons, despite a number of sentences deemed as background information, due to lack of the claim (thesis statement) supposed to serve as the ground for reasoning.

Table 4. Interpreting the quality of evidence

	T eam 1	T eam 2	T eam 3	T eam 4	T eam 5	T eam 6	T eam 7	T eam 8
<hr/>								
Evidence for reason 1 (1-5)								
Sufficiency	5	1	4	1	1	1	5	3
Credibility	3	1	3	1	1	1	3	3
Accuracy	3	1	3	1	1	1	3	3
<hr/>								
Evidence for reason 2 (1-5)								
Sufficiency	5	1	4	1	1	1	5	3
Credibility	3	1	3	1	1	1	3	3
Accuracy	3	1	3	1	1	1	3	3

Evidence for reason 3 (1-5)									
Sufficiency	5	1	4	1	1	1	5	3	
Credibility	3	1	3	1	1	1	3	3	
Accuracy	3	1	3	1	1	1	3	3	

This table demonstrates varied quality of evidence provided by each team rated using Likert scale. All teams already demonstrating their claims could provide sufficient evidence in which 37.5% of all students succeeding to propose good to very good sufficiency. Nevertheless, all those teams failed to warranty the credibility and accuracy of their evidence. Based on data analysis, all evidence despite the sufficiency indicate credibility and accuracy at fair level. In the meantime, 50% of the examined teams were found to show very bad quality of evidence because of the missing thesis statement categorized as the claim for the argumentative essay. The absence of claims automatically nullify the function of statements in the essay coded as evidence if the claim had been constructed.

Table 5. Existence of the Warranty

	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8
Evidence 1 and the claim (linked or not)	Yes	Yes	Yes	No	No	No	Yes	Yes
Evidence 2 and the claim (linked or not)	Yes	Yes	Yes	No	No	No	Yes	Yes
Evidence 3 and the claim (linked or not)	Yes	Yes	Yes	No	No	No	Yes	Yes

This chart outlines the warranty of evidence to the claim. As the evidence accompanies the reasons supporting the claim, the evidence collected is expected to directly link to the claim. Table 5 presents all teams managed to develop the claim of their essay along with rational enough evidence linked to the claim.

Table 6. Anticipated objection (rebuttal)

	T eam 1	T eam 2	T eam 3	T eam 4	T eam 5	T eam 6	T eam 7	T eam 8
or reason 1 (1-5)	F 0	0	0	0	0	0	0	0
or reason 2 (1-5)	F 0	0	0	0	0	0	0	0
or reason 3 (1-5)	F 0	0	0	0	0	0	0	0

Unfortunately, it seems all writing teams remain confused of developing anticipated objection/rebuttal in their supporting paragraphs and concluding paragraph to review the reasons and evidence created for backing up the claim.

Table 7. Students' argumentation performance according to Toulmin's Model

Final analysis of students' argumentation skill	T eam 1	T eam 2	T eam 3	T eam 4	T eam 5	T eam 6	T eam 7	T eam 8
	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)
Overall effectiveness/ineffectiveness of the argumentation	2	2	3	1	1	1	3	2

The chart displays overall effectiveness representing fulfilment of argumentation purpose by students after using Toulmin's Model in building their argumentation. Such purpose of argumentation is indicated from overall effectiveness/ineffectiveness drawn from accumulation of Likert's scale-based valuing the claim, reason, evidence and anticipated object/rebuttal. Apparently, 37.5% produced ineffective argumentation, while 37.5% have developed meaningless claims, reasons, and evidence. 75% teams have demonstrated even worse performance due to their failure to achieve overall effectiveness of features composing the argumentative text. Overall, only two teams or 25% students accomplishing the purpose of argumentation at fair level.

This study has limitation in terms of pedagogical design and comparison to SFL analysis. From pedagogical design, this study has similar steps with the other study but not involved how the instructional design was created to enable students as meaning makers. From SFL analysis, this study only took the two analysis of appraisal and thematic progression as meaning making analysis. Therefore, the further study needs to investigate the role of SFL based pedagogy in academic context such as paraphrasing, summarizing, and synthesizing academic source text. This study can be compared to the result of using SFL's model in shaping argumentative essay especially for phrases selection in the development of reasons and warranty.

CONCLUSIONS

The most significant weakness indicated from students' essays was the trouble at providing sufficiently compelling argument. Of 8 teams sampled out of 16 teams formed from 47 Electrical Engineering students, only 2 teams accomplished the task at fair/average level compelling argumentation. It was mainly due to absence of thesis statement resulting in groundless reasons that will definitely be irrelevant and non-warranty-based evidence not to mention shortages in rebuts as anticipation of objects intended to strengthening the claim and reasons backing it up. Second flaw was the application of grammatical rules observed from many incoherent sentences within each paragraph and syntax errors like fragment and run-on sentences. However, despite lack of students' efforts for paraphrasing sentences cited from references used, their essays reflect a certain level of critical thinking indicated from their enough knowledge to determine what should be extracted to incorporate into their own paragraphs from various references.

REFERENCES

- Department of Information Technology. (December 2021). *Writing an Essay*. Monash University <https://www.monash.edu/it/current-students/resources-and-support/style-guide/writing-an-essay>
- Dang, T. H., Chau, T. H., & Tra, T. Q. (2020). a Study on the Difficulties in Writing Argumentative Essays of English-Majored Sophomores At Tay Do University, Vietnam. *European Journal of English Language Teaching*, 6(1), 201–240. <https://doi.org/10.46827/ejel.v6i1.3389>
- Jumariati, Febriyanti, E. R., & Rizki, M. (2021). Argumentation Skills: An Analysis on EFL Students' Essays Based on Toulmin's Model of Argument.

- Proceedings of the 2nd International Conference on Education, Language, Literature, and Arts (ICELLA 2021)*, 587(Icella), 86–95. <https://doi.org/10.2991/assehr.k.211021.013>
- Kawulich, B. (2015). *Qualitative Data Analysis Techniques*. May.
- Li, J., & Huang, J. (2022). The impact of essay organization and overall quality on the holistic scoring of EFL writing: Perspectives from classroom english teachers and national writing raters. *Assessing Writing*, 51(September 2020), 100604. <https://doi.org/10.1016/j.asw.2021.100604>
- Suhartoyo, E., Ni'mah, D., & Ismiatun, F. (2020). the Common Mistakes of Undergraduate Efl Students in Writing. *ELLit : 2nd Online National Seminar on English Linguistics and Literature*, 37–46.
- [Luo, A. \(2021, September 2\). Content Analysis. A Step by Step Guide with Examples. Scibbr website. <https://www.scribbr.com/methodology/content-analysis/>](#)
- Morgan DL. Qualitative content analysis: a guide to paths not taken. *Qual Health Res*. 1993 Feb; 3(1):112-21. doi: 10.1177/104973239300300107. PMID: 8457790.
- [Nesbitt, L. \(1994-2022\). The Toulmin Method. The WAC Clearinghouse. Colorado State University. Available at <https://wac.colostate.edu/resources/writing/guides/>](#)
- Ozfidan, Burhan & Mitchell, Connie. (2020). Detected Difficulties in Argumentative Writing: The Case of Culturally and Linguistically Saudi Backgrounded Students. *Journal of Ethnic and Cultural Studies*. 7. 15. 10.29333/ejecs/382.
- Toulmin, SE. (2021). Purdue online Writing Lab Argument (https://owl.purdue.edu/owl/general_writing/academic_writing/historical_perspectives_on_argumentation/toulmin_argument.html)
- Writing Center (2020, October 1). *Genres*. California State University San Marcos. <https://www.csusm.edu/writingcenter/writing/genre.html>
- Vagias, Wade M. (2006). *Likert-type scale response anchors*. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson